To a certain degree, these results accord with those arrived at by Monsieur de Lapouge in France, that anthropologist contending that the enterprising, restless, long-heads migrate in disproportionate numbers from the rural districts to the cities, where, however, they eventually tend to die out. As regards this dying-out, so far as the blond long-heads are concerned, Dr. Ammon's figures do not appear to accord with the French conclusions. And having regard to the objections which have been urged against the latter, our author is wise in stating (in the preface) the necessity of further investigations before definite deductions are attempted. He, however, thinks it quite possible that a "selection of long-heads" may be taking place; and expresses the "pious wish" that such may prove to be the case.

As regards the contention of the French investigator that the dark Mediterranean long-heads are the type best adapted for an urban existence, where they choke out the long-headed immigrants, Dr. Ammon[1] considers that this is not supported by the results of his own work; this showing a total absence of the Mediterranean type in three out of the four urban districts, while in the fourth they are considerably less numerous than in the rural districts.

Pursuing the same subject, we find, in the fourteenth chapter of the second part, Dr. Ammon giving a series of interesting details with regard to the differences of skull-proportion and hair-colour between the sons of the immigrants into the towns and those of their native-bred inhabitants. From these it appears that in the smaller towns the sons of town-bred people exceed those of immigrants both in stature, sitting-height, and length of leg, as well as in the leg-index. In large cities, on the other hand, while the first three factors in the former show a similar increase over the country-breds, the leg-index is less. From the country population to the immigrants, from the latter to the sons of immigrants, and from these again to the sons of the city-dwellers there is an increase in the number of long-heads, with a proportionate diminution of round-heads.

In both generations of the town-breds the relative number of blue eyes at first increases and then diminishes in cities of all sizes; in small towns the number of persons with blond hair does the same, while in large towns it remains constant. In the town generation the North European and the Alpine types tend to converge, and the Mediterranean type to disappear. It is in consequence of these changes that a preponderance of blond persons is not observable among the recruits drawn from towns.

Although the above are only a few of the interesting results of the author's investigations, it will be evident that they are of the utmost importance in regard to current French theories as to the general inferiority of the round-heads, and their absorption in cities of the superior long-heads. But, as even the mental superiority of the latter over the former type is by no means admitted by all anthropologists, it is evident that we are at present only on the very threshold of studies of this nature. That results likely to be of real service in connection with the problems presented by urban and rural populations, especially those connected with the present preponderating increase of the former, will ensue from the steady pursuit of such studies, can but be the earnest hope of all those interested (and who is not?) in the future of the higher branches of the human race. R. L.

LIMNOLOGY.

The Microscopy of Drinking-Water. By G. C. Whipple, Biologist and Director of Mount Prospect Laboratory. Pp. xii + 300, and plates. (Brooklyn, N.Y.: Wiley and Sons. London: Chapman and Hall, Ltd., 1899.)

Examination of Water (Chemical and Bacteriological). By W. P. Mason, Professor of Chemistry, Rensselaer Polytechnic. Pp. 135. (New York: Wiley and Sons. London: Chapman and Hall, Ltd., 1899.)

THIS is an example of a class of books in the production of which the Americans are bidding fair to take a lead, the type of book which may be termed the popular practical scientific manual, where the limitation of the subject-matter and the thoroughness of treatment aimed at are worthy of the German, but devoid of that hair-splitting exactness which so often leads to obscurity; while the general style and breadth of treatment are essentially English, and at the same time are saved from the superficiality too common in native technical treatises, by the industry and original ability of the energetic American. At the same time, the present work is not devoid of a certain diffuseness, which we think is referable to the author's enthusiasm leading him into disquisitions too long for the proper purpose of the book, but which is possibly the more marked to us because he is writing about American waters in particular, and about conditions not known in England.

The title may seem to many to claim too much; for Mr. Whipple puts aside at the outset all that relates to bacteria, and takes a very wide view of "drinking-water." He regards the subject of the examination of water as divisible into

(1) Physical examination.
(2) Biological examination.
    (1) Microscopical.
    (2) Bacteriological.
(3) Chemical examination.

A mode of classification which lands him in some inconsistencies—for some Schizomycetes are dealt with later on—and would vitiate the work if it were not clearly set forth that he is concerned solely with that part of the microscopical examination of water which is not bacteriological in the accepted sense of the word, and comes under the head of Limnology, dealing with those organisms which can be filtered out by means of fine-meshed nets or coarse filters incapable of keeping back water-bacteria.

The position reminds us of Miss Kingsley's diatribe against the utility of filters in West Africa.

"A good filter is a very fine thing for clearing drinking water of hippopotami, crocodiles, water snakes, cat-fish, &c. . . . ; but if you think it is going to stop back the microbe of marsh-fever — my good sir, you are mistaken."

Mr. Whipple, however, does not attempt to stop the smaller organisms by his filters, but only deals with the

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[1] Page 448. It is a little difficult to reconcile Lapouge's statement as to the dying-out of long-heads in cities (see Keane's "Man, Past and Present," p. 520) with his contention that the Mediterranean long-heads show a special suitability for such an existence.

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larger ones, and having laid down his position, he proceeds to show, by his own interesting treatment of the theme, how large and important a subject that of limnology is, and how much neglected it has been in spite of the vast amount of information scattered in detail through the scientific literature of Europe.

Diatoms, Cyanophyceæ, Green Algæ, Fungi, and larger Schizomycetes, Protozoa, Rotifera, Crustacea, Polyzoa, Sponges, and miscellaneous higher aquatic plants and animals are dealt with in detail, and very interesting particulars are given of their numbers, distribution, and seasonal abundance in lakes and rivers, as well as many of their biological peculiarities.

Probably few people are aware that some of these small organisms contain powerfully odorous oils, and are responsible for the strong and unpleasant smell of certain waters, quite apart from decomposition.

We think, in spite of the many interesting facts regarding the existence of thermophilous organisms, the biology of blue-green algæ, &c., the author has missed some opportunities. For instance, we find no discussion or even mention of that puzzling phenomenon, the "Breaking of the Meres," although some of the organisms now known to be concerned—*Anabaena*, *Aphanozomenon*, &c.—are referred to. Again, it seems surprising that no reference occurs to the important *rôle* of such organisms as *Phormidium* in building up "Tufa," "Travertin," and other calcareous and siliceous substrata, particularly as some of the most striking examples occur in the United States.

Prof. Mason's little book proposes, if not protests, too much, as it is manifestly impossible for any author to cover the ground implied in the title in 126 small octavo pages of large print; and although we may give him credit for clear writing, an excellent selection of materials, and a general "up-to-date" style of presentment—including modern tables and charts—we cannot recommend this gossip about the chemical examination of water, with a smattering of bacteriological methods, as a serious textbook for students. On the other hand, we do commend it to the would-be writers of similar books in this country as indicating some of the new directions in which such writings should depart, and so abandon the too well-worn grooves in which our present bacteriologists are creeping onward.

Is not "Wolffhüggle," on p. 107, a misprint for Wolffhügel? It recurs on p. 108.

HEART AND SCIENCE.

Kritik der Wissenschaftlichen Erkenntniss. By Dr. H. v. Schoeler. Pp. viii + 677. (Leipzig: W. Engelmann, 1898.)

A FRIEND of Dr. v. Schoeler's died a victim to his devotion to science, when too late he had reached the conviction that his jealous mistress was not worth the sacrifice he had made for her. What, then, asked v. Schoeler, are the data, what the results of science and philosophy? How shall we free ourselves from their obsession, and make them servants rather than tyrants? Is ethical nihilism the upshot and a pessimism subversive of human endeavour in all directions other than the intellectual? Has Nietzsche, after all, the right of it?

Dr. v. Schoeler answers these questions in the present volume at, perhaps, inordinate length, overloading his work with quotations and instances not always quite relevant to his point. He essays nothing short of a critique of philosophy and of the natural sciences and a constructive theory of life without assumptions. In this task his performance is necessarily very unequal in different sections. His chapter on the ancient philosophy, for instance, is a not very valuable contribution to the history of anticipations. Parmenides is a "Schelling of antiquity," but this does not prevent Heraclitus being called in as a forerunner of the *Identitäts-philosophie*, and the account of Aristotelian science goes little, if at all, beyond what can be learned from G. H. Lewes. On the other hand, where he is more at home and possesses a more living interest, our author's criticisms, if rambling, are often to the point. It is, however, not always quite easy to determine what is intended as mere exegesis, what is the expression of v. Schoeler's own view.

His philosophical sympathies lie on the whole with Kant, interpreted not as containing Idealism of the Hegelian type in germ, but as frankly realistic, relativist, even agnostic. His master is the Kant of the antinomies, and of the unknowable *Ding-an-sich*, treating "freedom" as an ideal amid phenomenal determination. He also has a word of praise for the doctrine of monads, leans a little to Schopenhauer, and accepts the results of evolutionist biology and psychology, though critical of the extent to which they solve ultimate problems, and prepared with Kant to admit the teleological judgment with the limited and relative range allowed it in the third critique. In the scientific field, his interests seem to be mainly what may be termed biological in the wider sense.

The smallness of the results of science in general, however frankly we may admit those results, and the little advance made by either philosophy or science towards the solution of ultimate problems, leads to a provisional relativism almost sceptical. But pure scepticism is negated by the facts of life, and if we reject mechanical constructions as dogmatic, and shrink on our spiritual side from the issue of all dogmatisms and positivisms, and, indeed, of all -isms, in the insanity of Nietzsche, we need to find an escape.

Such an escape, v. Schoeler holds, is not provided by religion. It must be sought for in the idea of humanity, and the furtherance of its ideals in art, in the ethics of family life, and in work in the cause of society. That this earth may or will be dissolved with its phantasmagoria of human knowledge, human passions, human needs, human ideals, lies perhaps not obscurely among the teachings of science. But this pessimism is not subversive of effort and aspiration, so long as it does not despair of the commonwealth. There is no absolute, neither god, nor world, that we can know in other than a relative sense or with other than a relative value, for they have no existence other than a relative one. The advance of the new outlook for the beginning of the twentieth century consists in freeing men from an illusion or a madness, in a new and undogmatic positivism or relativism without pride of intellect, and with a soun hold upon purely relative ideals through the æsthetic and the ethical emotions.

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